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November 4, 2016

Eric Sundberg Slawson Exploration Company, Inc. 1675 Broadway, Suite 1600 Denver, Colorado 80202

RE: Closure Report
Big Bend 1-5 SWD Release Site
Mountrail County
New Town, North Dakota

Dear Mr. Sundberg

LT Environmental, Inc. (LTE) presents the following letter report documenting final closure status of a saltwater release at the Slawson Exploration Company Inc., (Slawson) Big Bend 1-5 Saltwater Disposal facility (SWD) (Site) in Mountrail County, North Dakota. The Site is located in the northeast quarter of the northwest quarter of Section 5 within Township 15 North and Range 92 West (Figure 1). Recommended closure of the release is based on North Dakota Industrial Commission (NDIC) standards and previous discussion between Slawson, LTE, and the NDIC regarding remediation activities at the release location.

#### **Background**

On September 25, 2016, approximately 500 barrels (bbl) of process water was released from a pipeline leading from a SWD storage facility to the off-pad injection well. Slawson responded by notifying NDIC, and within two hours of notification, Slawson field personnel created a berm around the impacted surface soil and pumped off all standing water resulting from the release. Following removal of the initial release water, Slawson created a drainage pathway and temporary surface impoundment to redirect and collect surface water away from the release. All recovered water was pumped into tanker trucks and disposed at an alternative SWD well.

#### **Delineation Sampling**

During the week of September 25, 2016, LTE was contracted by Slawson to perform background sampling and delineation sampling of the impacted area to assist in determining the best course of action for remediation of the impacted soil. The delineation included collecting 10 soil samples from the ground surface and subsurface using a manual hand auger and 7 shallow water samples. Shallow water was encountered during hand augering and observed to enter the holes at a depth of approximately 1.5 to 2 feet below ground surface (bgs). LTE believes the observed water was not groundwater, but the result of infiltration of the rain water and presence of release water restricted by a sand clay till layer approximately 1 feet to 2 feet bgs. Beneath the sandy clay till, a coarse sand dominated the soil profile. Water samples were collected at a depth of 2.5 feet bgs in the coarse sand layer underlying the less permeable clay layer. A Trimble® GeoExplorer® 6000 series



Global Positioning System (GPS) was used to determine the latitude and longitude location of each sample. Sample locations are presented in Figure 2.

Strict chain-of-custody (COC) protocol was followed from sampling through shipment. The date and time sampled, sample identifier, sampler's name, required analyses, and sampler's signature were included on the COC. Background and delineation soil/water samples were transported on ice in a cooler to Summit Scientific Laboratory in Golden Colorado. Analysis of soil samples was performed at both labs for electrical conductivity (EC), pH, chloride, sodium, calcium, magnesium, and sodium adsorption ratio (SAR). Analysis of pore-water samples only occurred at Summit Scientific Labs and included EC and chloride.

The laboratory analytical results and field screening results for the soil samples are presented in Table 1 and for the pore water in Table 2. The soil was already saturated at the time of the release and sampling due to a heavy rainfall event which occurred prior to the release. As a result, the antecedent moisture content of the surface soil at the time of release likely limited infiltration of released process water due to exceedance of soil infiltration capacity. Only two samples (SB01 – 0-1' and SB07 – 0-1') exhibited elevated EC and chloride concentrations. All of the pore water samples contained elevated concentrations of chloride and EC levels, including background water sample BG-02. Background water sample BG-02 was collected approximately 100 feet outside the visibly impacted area, and laboratory analytical results indicate that elevated chloride and EC occur naturally within the pore-water of the near-surface soil (Figure 3).

An additional sampling program was carried out one week following the initial sample collection and field screening program. The intent of this additional program was to collect more information to help guide remediation activities and to further refine the extent of impacted area resulting from the saltwater release and to test the material stockpiled onsite that was removed during pipeline exposure and excavation activities; these samples (1010-01 through 1010-05) were collected on October 10, 2016. The second set of samples collected from the impacted area indicated elevated EC values approximately 1-2 feet bgs despite having lower ion concentrations in the soil samples. This suggests that the soil naturally shows high conductivity due to the presence of non-regulated ions.

Based on the results of the initial sampling program and the secondary sampling program, it was decided through discussions with the NDIC, Slawson, and LTE that the remediation program should focus on the drainage channel and temporary surface impoundment constructed by Slawson at the time of release, and that laboratory confirmation samples indicating lower than regulated chloride concentrations were the best guide in determining the closure status of the impacted area.

#### **Remediation Activities and Site Closure**

Remediation of the impacted area occurred between October 19 to October 26, 2016. Remediation included scraping of the upper 12 inches to 14 inches of the soil profile, as these were shown to have the highest indications of impact resulting from the saltwater release, as shown by samples SB-07 and SB-01 having chloride concentrations exceeding 4,000 milligrams per kilogram (mg/kg); NDIC recommended action levels for chloride are 2,560 mg/kg. Confirmation samples



were collected regularly during excavation activities from the base of the excavation in order to verify excavation extents and remediation activities.

Regular field screening using the EC probe was conducted during excavation in order to ensure effective removal of impacted material. Field screening results are presented in Table A1 through Table A4 and locations of field screening samples are depicted in Figure A1 through Figure A4 in Appendix A. Field screening determined that any soil with a field measured EC value exceeding 6 millimhos per centimeter (mmhoms/cm) was to be excavated and disposed of at the CleanHarbors facility in Sawyer, North Dakota. This field screening value was utilized as an approximation of impacted extent and any soil remaining at the project location was verified using confirmation laboratory sampling.

Slawson removed approximately 1,200 cubic yards of material from the excavation extent depicted in Figure 4. In total, 12 confirmation samples were collected from the excavation area. Confirmation samples were transported on ice in a cooler to ALS Environmental Laboratory in Holland, Michigan. Analysis of soil samples was performed for EC, pH, chloride, sodium, calcium, magnesium, and SAR.

The entirety of the excavation area returned laboratory samples with chloride levels below NDIC action levels. At the west side of the excavation near SS01 (Figure 4), the laboratory confirmation sample indicated that elevated chloride concentrations remained in the soil at a depth of 12 inches bgs. This sample location was nearest the point of release, and as such, was exposed to a larger volume of water during the initial release. In order to properly remediate the Site, the area surrounding SS01 was further excavated to a depth of approximately 30 inches, at which point the underlying coarse sand layer was measured. Two additional soil samples (SS11 and SS12 in Figure 4) were collected from the over-excavated area and sent to the laboratory for confirmation. Both of these samples showed laboratory results below NDIC action levels.

At the north side of the excavation, field screening indicated that EC levels (greater than 12 mmhoms/cm) were elevated in a small area (approximately 20 feet by 20 feet) exceeding a depth of 12 inches. In order to ensure compliance with NDIC action levels this area was excavated to a depth of 30 inches. At this point the naturally occurring coarse sand layer was encountered, and the hole began to fill with water from the near-surface pore water. This water, as previously noted by BG-02, has a naturally high EC level and was affecting the delineation of the impacted extent via field screening methods. Based on this analysis the decision was made to terminate the excavation in this area at a depth of 30 inches and a sample was collected for laboratory analysis from the sidewall of the over-excavated area (SS06) and from the base (SS07). The laboratory results were used to assess the effectiveness of excavation in this area, and both SS06 and SS07 showed chloride concentrations below NDIC action levels.

At SS07 the measured sodium levels were higher than surrounding soil samples. Sodium can act as a disrupting agent to soil structure when present in high concentrations, however, at SS07 these elevated levels were counterbalanced by a high calcium content, which suggest the potential for sodium to act as a soil dispersant may be negated by the presence of calcium in the soil. In addition, the high calcium and magnesium content are not indicative of typical SWD process water constituents, and indicate a naturally occurring high ionic concentration in this location. The higher



the calcium content of the soil, the lower the chance for sodium to have a negative effect on the soil structure.

The naturally occurring coarse sand layer at a depth of approximately 2 feet to 3 feet bgs presents a high permeability medium for dilution and dispersal of any residual sodium and chloride ions in the soil. This dilution effect will be enhanced through the infiltration of spring freshet and rain events in the spring of 2017.

Upon reception and approval of laboratory confirmation samples, the entirety of the excavation was backfilled with clean backfill material sourced by Slawson. The area was graded and tilled to ensure any areas disturbed by excavation activities were suitable for agriculture use.

### **Summary**

In order to ensure complete remediation and to verify flushing effects following spring freshet, LTE recommends monitoring the revegetation efforts during farming activities of 2017, and collecting additional confirmation samples to verify flushing effects. This will maintain landowner satisfaction with remediation activities. If detrimental effects on crop growth are noted in the area of the release, further remediation activities may be required.

If you have any questions or comments regarding this matter, or would like further assistance with any of the recommended actions, please contact our office at 303-433-9788.

Sincerely,

LT ENVIRONMENTAL INC.

Bryan Koehler

Staff Environmental Engineer

John D. Peterson. P.G. Chief Operating Officer

#### Attachments

Figure 1 – Site Overview

Figure 2 – Background Sampling and Impact Delineation

Figure 3 – Confirmation Sampling and Excavation Extents

Table 1 – Background Soil Sampling Laboratory Results

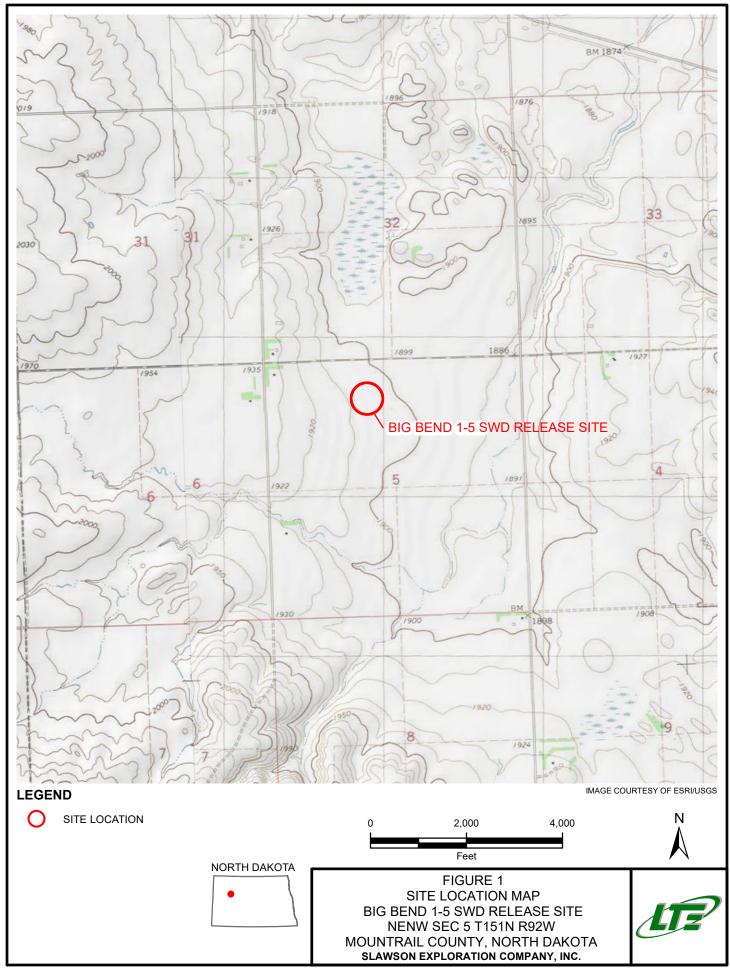
Table 2 – Background Near Surface Groundwater Laboratory Results

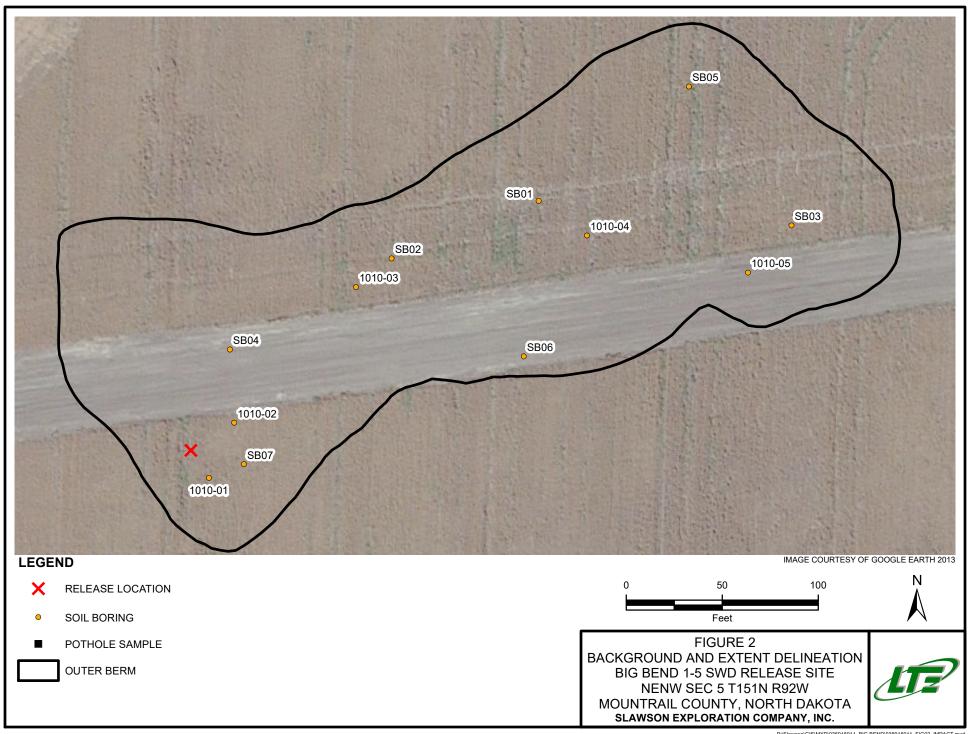
Table 3 – Confirmation Sampling Laboratory Results

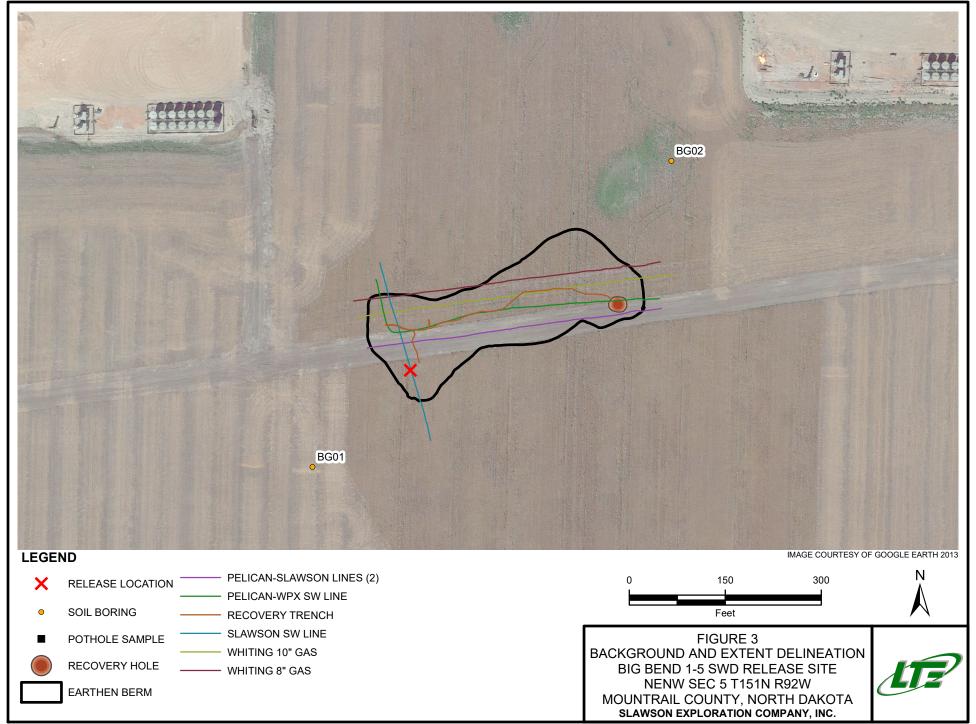
Appendix – Field Screening and Daily Summaries

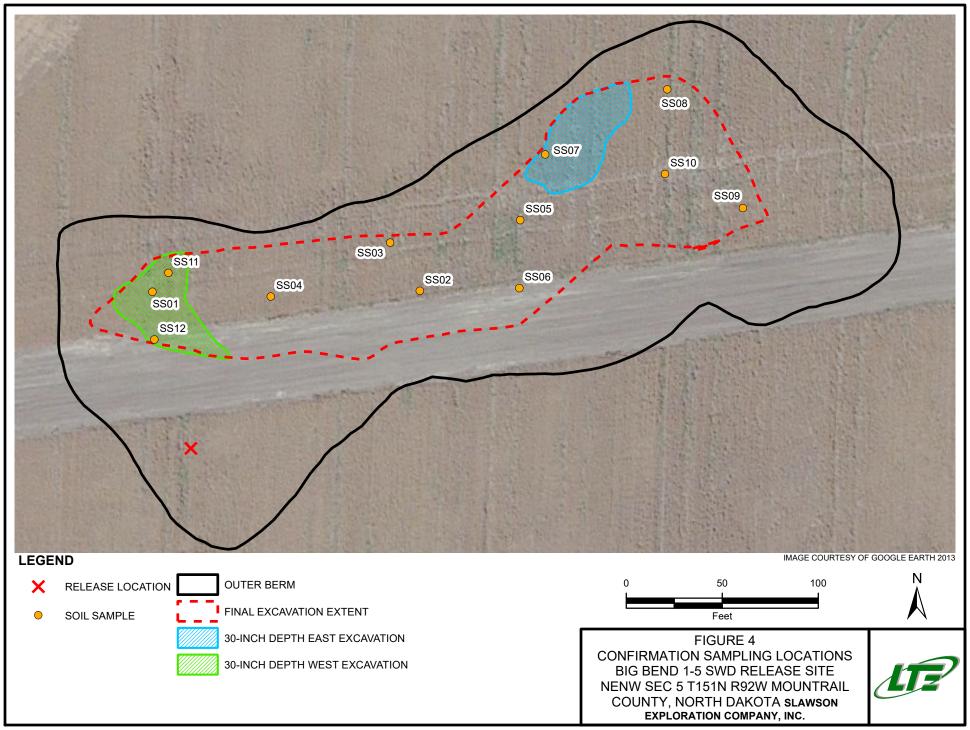
**FIGURES** 











**TABLES** 



#### TABLE 1

### SOIL ANALYTICAL RESULTS BIG BEND 1-5 SWD RELEASE SITE SLAWSON EXPLORATION COMPANY, INC. MOUNTRAIL COUNTY, NORTH DAKOTA

Sample Name	Lab Name	Sample Type	Sample Date	Sample Depth (feet)	Field EC Reading (µmhos/cm)	Field Chloride Strip Reading (mg/L)	Electrical Conductivity (µmhos/cm)	Calcium (mg/kg dry)	Magnesium (mg/kg dry)	Sodium (mg/kg dry)	SAR	Chloride (mg/kg)
SB01 - 0-1'	1610030-01	Soil	9/29/2016	1	12,520	2,604	13,700	6,520	558	2,080	6.64	4,250
SB01 - 1-2'	NS	Soil	9/29/2016	2	5,880	1,776	NS	NS	NS	NS	NS	NS
SB02 - 0-1'	1610030-03	Soil	9/29/2016	1	2,200	648	3,200	1,680	415	532	3.01	1,230
SB02 - 1-2'	NS	Soil	9/29/2016	2	1,560	444	NS	NS	NS	NS	NS	NS
SB03 - 0-1'	1610030-05	Soil	9/29/2016	1	3,920	1,200	3,730	899	210	441	3.44	1,060
SB03 - 1-2'	NS	Soil	9/29/2016	2	400	148	NS	NS	NS	NS	NS	NS
SB03 - 2'-3'	1610030-06	Soil	9/29/2016	3	-	-	934	1,500	268	159	0.994	290
SB04 - 0-1'	1610030-08	Soil	9/29/2016	1	3,000	896	3,240	1,320	347	468	3.08	1,060
SB04 - 1-2'	NS	Soil	9/29/2016	2	160	<120	NS	NS	NS	NS	NS	NS
SB05 - 0-1'	NS	Soil	9/30/2016	1	120	<120	NS	NS	NS	NS	NS	NS
SB05 - 1-2'	1610030-10	Soil	9/30/2016	2	2,240	316	3,420	11,400	547	479	1.19	1,530
SB06 - 0-1'	1610030-12	Soil	9/30/2016	1	0	<120	446	1,880	532	13.6	0.0713	8.3
SB06 - 1-2'	NS	Soil	9/30/2016	2	0	<120	NS	NS	NS	NS	NS	NS
SB07 - 0-1'	1610030-14	Soil	9/30/2016	1	10,960	>2,536	1,290	2,080	465	2,160	11.1	4,600
SB07 - 1-2'	NS	Soil	9/30/2016	2	40	<120	NS	NS	NS	NS	NS	NS
*BG01 - 0-1'	1610030-16	Soil	9/30/2016	1	0	<120	412	1,410	404	15.5	0.0937	9.7
*BG01 - 1-2'	NS	Soil	9/30/2016	2	0	<120	NS	NS	NS	NS	NS	NS
*BG02 - 0-1'	1610030-17	Soil	9/30/2016	1	0	<120	158	1,270	341	10.3	0.0663	3.5
*BG02 - 1-2'	NS	Soil	9/30/2016	2	0	<120	NS	NS	NS	NS	NS	NS
1010-01	1610720-01	Soil	10/10/2016	1	NS	NS	2,600	79	58	270	5.6	56
1010-02	1610720-02	Soil	10/10/2016	1	NS	NS	16,000	730	460	1,300	9.1	1,100
1010-03	1610720-03	Soil	10/10/2016	1.5	NS	NS	9,300	550	320	460	3.9	490
1010-04	1610720-04	Soil	10/10/2016	2	NS	NS	6,000	480	190	280	2.8	270
1010-05	1610720-05	Soil	10/10/2016	1	NS	NS	15,000	890	210	1,400	11	1,800
	NDIC Recommended Action Levels								NE	NE	12	2,560

NOTES:

\*\* NDDH Action level. Not NDIC established.

EC - electrical conductivity

 $\mu mhos/cm$  -micromhos per centimeter (equivalent to  $\mu S/cm)$ 

mg/L - milligram per liter SAR - sodium adsorption ratio
mg/kg - milligram per kilogram
BOLD - indicates value exceeds the applicable standard
NS - not submitted for laboratory analysis

NE - not established

- not measured

< or > field screening equipment detection limit

NDIC - North Dakota Industrial Commission



#### TABLE 2

### GROUNDWATER ANALYTICAL RESULTS BIG BEND 1-5 SWD RELEASE SITE SLAWSON EXPLORATION COMPANY, INC. MOUNTRAIL COUNTY, NORTH DAKOTA

Sample Name	Sample Type	Sample Date	Sample Depth (feet)	Field EC Reading (µmhos/cm)	Electrical Conductivity (µmhos/cm)	Chloride (mg/L)
SB01	Water	9/29/2016	2.5	18,510	25,000	12,100
SB02	Water	9/29/2016	2.5	5,830	6,830	2,240
SB03	Water	9/29/2016	2.5	900	1,520	241
SB04	Water	9/29/2016	2.5	6,590	8,060	2,690
SB05	Water	9/30/2016	2.5	>19,990	21,600	17,700
SB06	Water	9/30/2016	2.5	950	1,200	25.8
SB07	Water	9/30/2016	2.5	5,950	6,560	1,950
BG02	Water	9/30/2016	2.5	700	9,060	6,540
ND	DH Recommende	ed Action Levels			1,500**	250**

#### **NOTES:**

\*\* NDDH Action level. Not NDIC established.

EC - electrical conductivity

μmhos/cm -micromhos per centimeter (equivalent to μS/cm)

mg/L - milligram per liter

SAR - sodium adsorption ratio

mg/kg - milligram per kilogram

**BOLD** - indicates value exceeds the applicable standard



#### TABLE 3

#### SOIL CONFIRMATION SAMPLES BIG BEND 1-5 SWD RELEASE SITE SLAWSON EXPLORATION COMPANY, INC. MOUNTRAIL COUNTY, NORTH DAKOTA

Sample Name	Lab Name	Sample Type	Sample Date	Sample Depth (inches)	Field EC Reading (µmhos/cm)	Electrical Conductivity (µmhos/cm)	Calcium (mg/kg dry)	Magnesium (mg/kg dry)	Sodium (mg/kg dry)	SAR	Chloride (mg/kg)
SS01*	16101518-01	Soil	10/20/2016	12	5.89	150,000	6,400	900	17,000	53	8,000
SS02	16101518-02	Soil	9/29/2016	14	2.89	18,000	1,100	380	1,000	6.9	1,200
SS03	16101518-03	Soil	9/29/2016	14	4.78	17,000	1,200	370	870	5.6	1,100
SS04	16101518-04	Soil	9/29/2016	14	0.67	5,700	290	130	150	1.9	290
SS05	16101518-05	Soil	9/29/2016	14	6.78	9,900	320	220	370	3.9	780
SS06	16101518-06	Soil	9/29/2016	18	7.73	7,900	250	190	190	2.2	650
SS07	16101518-07	Soil	9/29/2016	30	13.07	30,000	1,499	400	2,500	15	1,300
SS08	1610030-08	Soil	9/29/2016	12	5.43	16,000	820	220	590	4.7	1,100
SS09	1610030-09	Soil	9/29/2016	14	2.88	2,500	180	58	6.6	0.11	19
SS10	1610030-10	Soil	9/30/2016	14	5.47	2,800	230	68	39	0.58	140
SS11	1610030-10	Soil	9/30/2016	26	4.7	2,200	100	59	120	2.4	100
SS12	1610030-12	Soil	9/30/2016	26	3.12	0.77	38	40	16	0.42	12
	NDI			4,000**	NE	NE	NE	12**	2,560		

#### NOTES:

\*SS-1 was further excavated based on high initial laboratory results; SS-11 and SS-12 supercede laboratory results from SS-1 \*NDDH Action level. Not NDIC established.

EC - electrical conductivity

$$\label{eq:mass_problem} \begin{split} & \mu mhos/cm - micromhos per centimeter (equivalent to ~\mu S/cm) \\ & mg/L - milligram per liter \\ & SAR - sodium ~adsorption ratio \end{split}$$

BOLD - indicates value exceeds the applicable standard NS - not submitted for laboratory analysis

NE - not established

- not measured

< or > field screening equipment detection limit

NDIC - North Dakota Industrial Commission

### **APPENDIX**



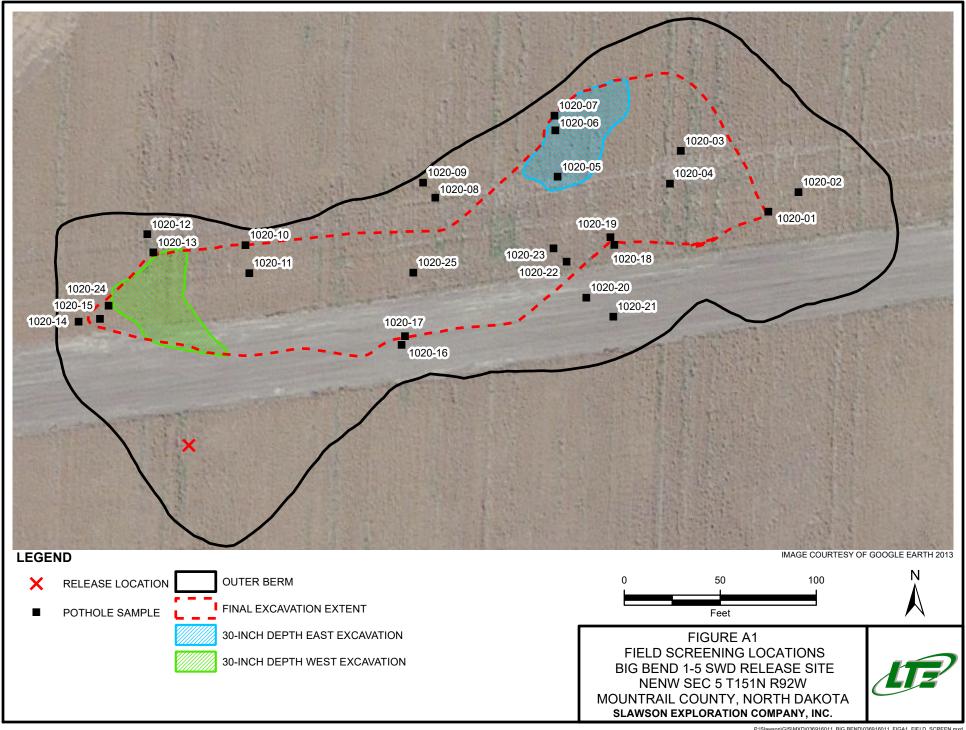
# Slawson Exploration Company Inc. BIG BEND 1-5 SWD RELEASE SITE TABLE A1: EXCAVATION FIELD NOTES



**Project Number:** 36916011 **Sampler Name:** Bryan Koehler

Date	Soil Sample ID	Approximate Depth	EC (ms/m)	Notes	Pass/ Fail	Lab Sample (Y/N)
	1020-01	6"	>20	Delineation of excavation measurement	Fail	N
	1020-02	6"	9.95	Delineation of excavation measurement	Pass	N
	1020-03	6"	3.71	Delineation of excavation measurement	Pass	N
	1020-04	6"	>20	Delineation of excavation measurement	Fail	Ν
	1020-05	6"	18.88	Delineation of excavation measurement	Fail	N
	1020-06	6"	17.65	Delineation of excavation measurement	Fail	Ν
	1020-07	6"	1.65	Delineation of excavation measurement	Pass	N
	1020-08	6"	11.85	Delineation of excavation measurement	Fail	N
	1020-09	6"	3.29	Delineation of excavation measurement	Pass	N
	1020-10	6"	2.34	Delineation of excavation measurement	Pass	N
	1020-11	6"	18.42	Delineation of excavation measurement	Fail	N
	1020-12	6"	2.23	Delineation of excavation measurement	Pass	N
	1020-13	6"	18.85	Delineation of excavation measurement	Fail	N
	1020-14	6"	2.42	Delineation of excavation measurement	Pass	N
10/20/2016	1020-15	6"	16.74	Delineation of excavation measurement	Fail	N
	1020-16	6"	2.49	Delineation of excavation measurement	Pass	N
	1020-17	6"	17.74	Delineation of excavation measurement	Fail	N
	1020-18	6"	2.77	Delineation of excavation measurement	Pass	N
	1020-19	6"	14.98	Delineation of excavation measurement	Fail	N
	1020-20	6"	19.48	Delineation of excavation measurement	Fail	N
	1020-21	6"	2.14	Delineation of excavation measurement	Pass	N
	1020-22	16"	2.37	Base of Excavation	Pass	N
	1020-23	6"	15.54	Wall of Excavation	Fail	N
	1020-24	12"	2.34	Base of Excavation	Pass	N
	1020-25	16"	3.42	Base of Excavation	Pass	N
	SS-01	12"	5.89	Base of Excavation		Y
	SS-02	14"	2.69	Base of Excavation		Y
	SS-03	14"	4.78	Base of Excavation		Y
	SS-04	14"	0.67	Base of Excavation		Υ
Date	Notes					

LTE onsite to oversee excavation of saltwater impacted surface soil at 0800. Upon arrival, LTE delineated the approximate excavation extents using a field EC probe to find the areas impacted, as identified by high EC readings. This area followed the center line of the bermed area, and the followed the surface water redirection channel constructed by Slawson following the release of process water from the pipeline. Upon marking the estimated excavation extent, Whiting Petroleum representative indicated that they did not want any trucks working on top of the Whiting pipelines in the area, and although they were ok with excavating the upper 12 - 24 inches of surface soil from over top of the lines, they wanted the pipelines potholed every 50 ft to confirm elevations. No hydrovac was onsite at the time of this request, so excavation started at the point of release in the Pelican pipeline; a hydrovac truck arrived at 1030 and completed potholing by 1300. Once excavation started, LTE noted high EC in the sidewalls of the excavation from 8-10 inches below ground surface (EC>15). This high EC values terminated at a depth of 12-14 inches below ground surface. The estimated maximum excavation depth will follow the 12 - 14 inch depth determined from this initial screening. Excavator downtime from 1500-1600 due to truck getting stuck during loading process, excavation halted until 1700 to get truck free; all excavation stopped at 1730. LTE offsite 1730.



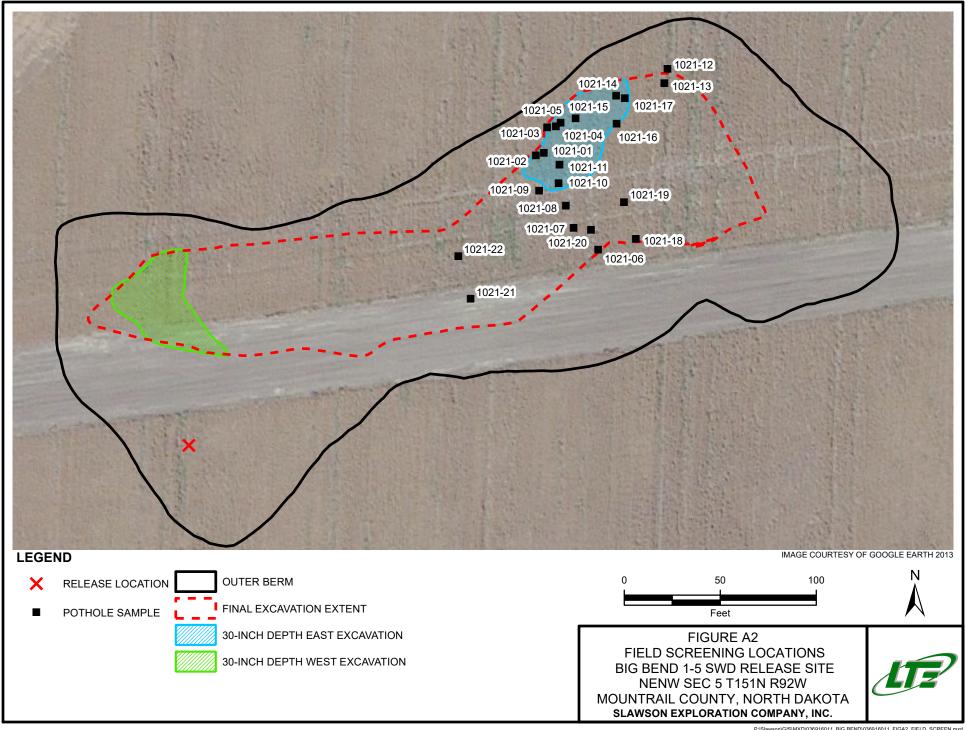
# Slawson Exploration Company Inc. BIG BEND 1-5 SWD RELEASE SITE TABLE A2: EXCAVATION FIELD NOTES



**Project Number:** 36916011 **Sampler Name:** Bryan Koehler

Date	Soil Sample ID	Approximate Depth	EC (ms/m)	Notes	Pass/ Fail	Lab Sample (Y/N)
	1021-01	12"	16.83		Fail	N
	1021-02	26"	11.87		Fail	N
	1021-03	14"	2.47		Pass	N
	1021-04	14"	3.68		Pass	N
	1021-05	3"	18.68		Fail	N
	1021-06	12"	2.63		Pass	N
	1021-07	12"	8.63		Pass	N
	1021-08	15"	8.37		Pass	N
	1021-09	15"	9.67		Passs	N
	1021-10	30"	7.34		Pass	N
	1021-11	30"	9.86		Pass	N
	1021-12	3"	3.73		Pass	N
40/04/0040	1021-13	12"	3.94		Pass	N
10/21/2016	1021-14	12"	14.73		Fail	N
	1021-15	12"	15.64		Fail	N
	1021-16	20"	9.87		Pass	N
	1021-17	20"	4.56		Pass	N
	1021-18	14"	4.93		Pass	N
	1021-19	14"	5.88		Pass	N
	1021-20	14"	4.09		Pass	N
	1021-21	14"	7.42		Pass	N
	1021-22	14"	7.32		Pass	N
	SS-05	14"	6.78	Base of Excavation	Pass	Υ
	SS-06	16"	7.73	Base of Excavation	Pass	Υ
	SS-07	30"	13.07	Base of Excavation	Pass	Y
	SS-08	12"	5.43	Base of Excavation	Pass	Υ
Date	Notes					

LTE onsite to oversee excavation of saltwater impacted surface soil at 0800. No rain occurred overnight. Upon arrival, haul trucks were waiting to be loaded. Digging commenced at approximately 1000. The outer perimeter of the north side of the excavation was adjusted based on new measurements made by LTE using the EC probe; the excavation was extended approximately 15 feet further north. At the area where this additional excavation was noted, high EC values were measured at a depth of 12 inches; it was decided to extend the excavation in this area to a depth of 30 inches (can be seen in figure). High EC readings continued at a depth of 30 inches, however, they were attributed to extraneous ions in the soil as well as the saturated state of the soil; laboratory results from previous auger investigations at this location indicated low chloride and sodium levels. The excavation was halted in this location at a depth of 30 inches. The remainder of the excavation was maintained at a total depth of 12-14 inches below ground surface. Almost all of the area to be excavated has been exposed at the end of the day save for the eastern extent; this work will continue next week. Stockpiled material volumes continues to be a hindrance on effective excavation and hauling cannot keep up with the excavation.



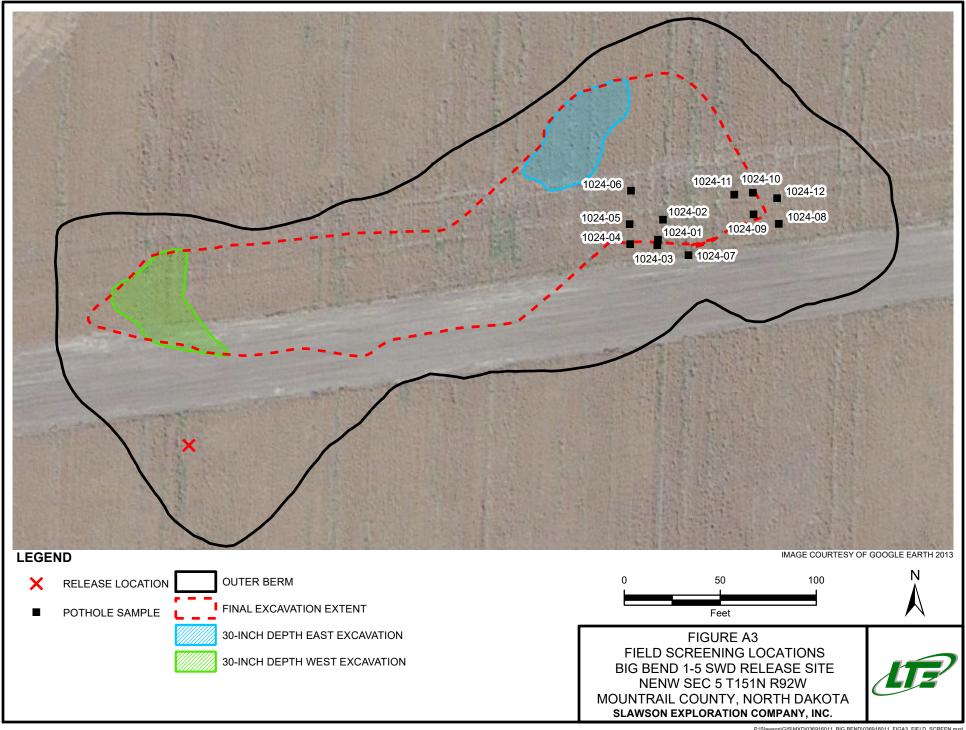
# Slawson Exploration Company Inc. BIG BEND 1-5 SWD RELEASE SITE TABLE A3: EXCAVATION FIELD NOTES



**Project Number:** 36916011 **Sampler Name:** Bryan Koehler

Date	Soil Sample ID	Approximate Depth	EC (ms/m)	Notes	Pass/ Fail	Lab Sample (Y/N)
	1024-01	16"	3.84		Pass	N
	1024-02	16"	7.46		Pass	N
	1024-03	6"	3.06	Sidewall	Pass	N
	1024-04	6"	5.47		Pass	N
	1024-05	14"	2.79		Pass	N
	1024-06	14"	9.82		Pass	N
40/04/0040	1024-07	3"	4.07	Outside excavation area	Pass	N
10/24/2016	1024-08	3"	5.26		Pass	N
	1024-09	14"	4.28		Pass	N
	1024-10	14"	7.97		Pass	N
	1024-11	14"	1.63		Pass	N
	1024-12	3"	8.95		Pass	N
	SS-09	14"	2.88	Floor of excavation	Pass	Υ
	SS-10	14"	5.47	Floor of excavation	Pass	Υ
Date	Notes					

LTE onsite at 0900 to oversee final stages of excavation. Upon arrival haul trucks were being loaded with stockpiled material. Additional excavation is being inhibited by stockpiled material, and did not commence until 1030 am. By 1300, and to expedite excavation/loading activities, LTE directed excavator to dig potholes in areas which required confirmation sampling to approximate depth of final excavation. LTE field screened these potholes and collected confirmation samples for laboratory testing. The remainder of the day was dedicated to loading haul trucks from the stockpiled material pile and no further excavation was occurring, and as such, LTE left the site at 1300.



# Slawson Exploration Company Inc. BIG BEND 1-5 SWD RELEASE SITE TABLE A4: EXCAVATION FIELD NOTES



**Project Number:** 36916011 **Sampler Name:** Bryan Koehler

Date	Soil Sample ID	Approximate Depth	EC (ms/m)	Notes	Pass/ Fail	Lab Sample (Y/N)
	1025-01	14	2.6		Pass	N
	1025-02	30	7.4		Pass	N
	1025-03	30	3.58		Pass	N
	1025-04	30	7.6		Pass	N
	1025-05	30	8.7		Pass	N
	1025-06	30	8.98		Pass	N
	1025-07	12	2.63		Pass	N
	1025-08	12	2.43		Pass	N
	1025-09	30	3.02		Pass	N
	1025-10	30	9.89		Pass	N
	1025-11	30	7.63		Pass	N
	1025-12	30	6.57		Pass	N
10/25/2016	1025-13	30	1.17		Pass	N
10/25/2016	1025-14	12	2.08		Pass	N
	1025-15	12	2.16		Pass	N
	1025-16	12	9.73		Pass	N
	1025-17	12	5.72		Pass	N
	1025-18	26	11.29		Pass	N
	1025-19	26	8.73		Pass	N
	1025-20	15	6.28		Pass	N
	1025-21	26	9.92		Pass	N
	1025-22	26	9.06		Pass	N
	1025-23	26	2.24		Pass	N
	1025-24	26	12.17		Pass	N
	SS-10	30	4.70		Pass	Υ
	SS-11	30	3.12		Pass	Y
Date	Notes				-	

LTE onsite at 0750 to direct further excavation in the area of SS-01. Laboratory results indicated that impacted soil remained in the vicinity of SS-01 which exceeded NDIC action levels and required further excavation. This area is highlighted in Figure A-4. The extent of the new excavation area was marked out by LTE; the new depth of the porposed excavation was 30 inches below ground surface, and excavation activities were overseen by LTE through the course of the day. Field screening was performed regularly during excavation to maintain EC levels below reasonable limits, and upon completion of excavation, two confirmation samples were collected to verify with laboratory analysis the remediation activities. Upon LTE departing the site at 1330, Slawson had begun stockpiling clean backfill on the south side of the excavation in preparation for closure of the excavation.

